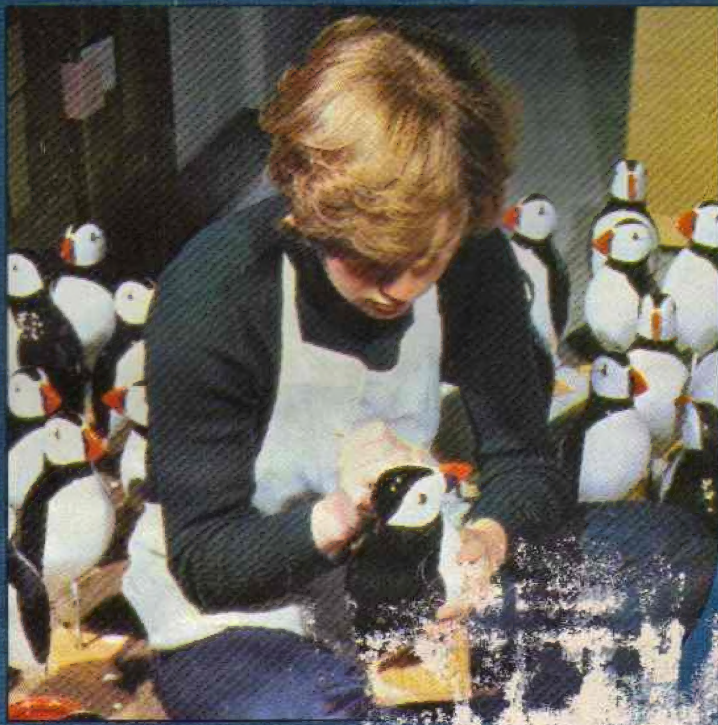
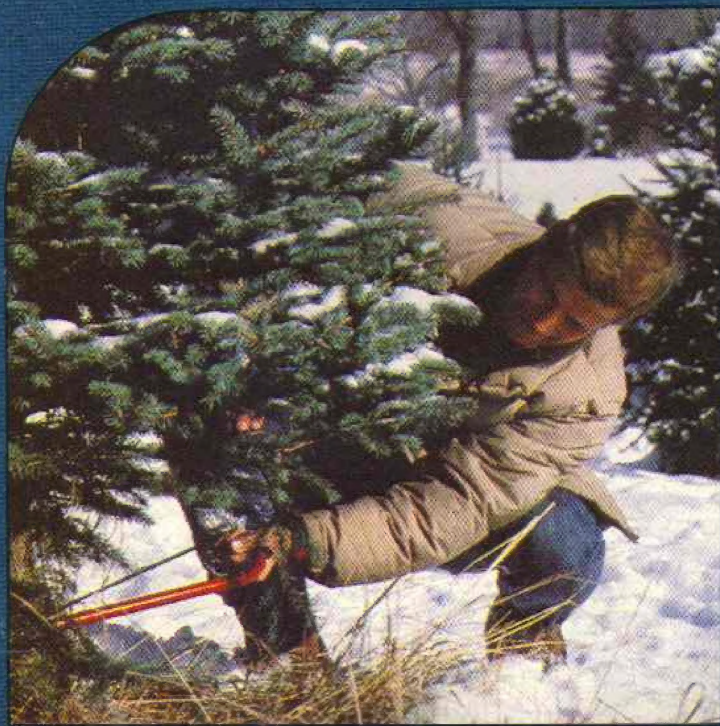


321 CONTACT TM

Inside: A 1983 Calendar Poster!





A Helping Hand

This fluffy fellow is a baby puffin. He was born in Canada. But people brought him, and 700 other puffin chicks, to live on an island in Maine. People don't usually move baby birds around. But the trip these chicks took was part of a plan called Project Puffin. It is helping the birds to make a comeback on this island, where thousands of puffins once lived. To read more about Project Puffin, turn to page 22.

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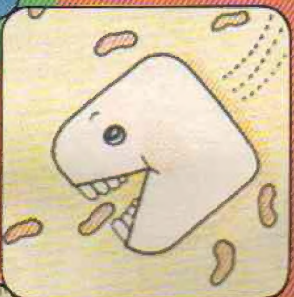
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A HARVEST EVERGREENS

Life on a Christmas Tree Farm

by Mary Bilderback Abel

The holidays are almost here again. This is a busy and exciting time. And it is even more exciting for one 11-year-old girl who lives on a farm where Christmas trees are grown.

Hannelore Schmidt and her family are getting ready now for a lot of visitors at their big Ohio farm. Soon, more than 10,000 people will go there to buy their trees. It is Hannelore's job to help people choose the right one.

Timbuk, the Schmidt family's 250-acre farm, is beautiful. It has many rows of different kinds of evergreen trees. They're a pretty sight, especially when covered with snow. "The trees look like a

Christmas card," says Hannelore.

Timbuk is a special place to visit during the holiday season. If you went there, you would find Hannelore already working by 9 A.M. on December weekends. Today she is early. The weather is almost ideal for tree cutting. There is very little wind and it is cold and sunny. If there were an inch of snow, the day would be perfect.

This good weather will bring many customers. Lots of families drive to Timbuk from nearby Ohio cities. This is one of the largest cut-your-own tree farms or plantations in the state. There are about 150,000 trees growing here.

Today's early customers are members of a

Right: During the winter the warmest place at Timbuk is the greenhouse. Today, Hannelore is watering the poinsettias.



OF



family from Newark, Ohio. First, Hannelore tells them to pick up one of the farm's small, bow-shaped saws. It will be used to cut down the tree they choose. Then Hannelore gets on a yellow train with the family. They're heading for the forest area. These people want a kind of evergreen known as a *Douglas fir*.

The driver of the train doesn't stop at the first trees they see. Hannelore explains that some trees are too young to be sold yet. They must be tall and full enough to look good as Christmas trees. Most trees are six to 12 years old before they are ready for cutting.

Soon the driver yells, "Douglas firs." The family gets off the train. Hannelore points to a section of nicely shaped trees. They will look here.

The girl has learned a lot about trees from her father and grandfather, who own the farm. She says that three kinds of evergreens ➤

Left: At the information booth, Hannelore tells people about the different kinds of trees they can buy at her family's farm.



Trips to and from the trees are made on this yellow train.

are chosen as Christmas trees in the U.S. The spruces are cone-shaped and thick. They have sharp, pointed needles. Fir trees are more slender. Both firs and spruces have a sweet smell. Pine trees are less triangular-shaped than the other trees. Their scent is more sharp and fresh.

Hannelore's own favorite trees are the blue spruce and the Fraser fir. But many people prefer the Scotch pine. It is the most popular Christmas tree in the United States. This tree is hardy, inexpensive and easy to grow.

The Perfect Tree

Choosing a tree isn't always easy. Sometimes people measure one with their hands, close their eyes and try to imagine how it will look in their living room, decorated with lights and ornaments.

After 20 minutes of searching, the family that Hannelore is helping finally finds the perfect tree. The father saws at its trunk in swift, even strokes. He is following a tradition of cutting your own Christmas tree that began 400 years ago in Germany. This custom became popular in parts of the United States more than 100 years ago.

When the tree is down, everyone helps carry it to the waiting train. Soon the farm workers will unload the tree, tag it and bundle it. They



Hannelore shows this couple and their young son the way to the balsam fir trees.

make sure that each customer gets the right one.

Now it's back to Timbuk's warm lodge for Hannelore and the family. She explains what they should do when they get their tree home. "Before you bring it inside to decorate, make a new cut several inches from the base," she says. "That will help the tree take in more water."

Hannelore's advice is important. Evergreens are less likely to catch fire when they're watered well. They need about two quarts (1.8 l) of water a day. Getting enough water also helps a tree to keep its needles instead of shedding them.

Hannelore's father, Jack, has some advice for customers, too. He tells them that after the holidays, their tree can be put outdoors to make a feeding station for birds and other wildlife. Seed and bread may be tied to its branches. People can also use their trees in another way if they remove most of the branches. Their trunks make good windbreaks to protect shrubs, and other low plants in the yard, from snow and wind.



Above: Timbuk's customers are given saws to cut their own trees. This man is cutting down a blue spruce. **Left:** This baling machine is used to tie up trees in neat bundles.



Spring Planting

Although it's fun for Hannelore to work at Timbuk during the holidays, caring for the farm is a year round job. One important part is the planting of new trees. Timbuk has more than 150,000 evergreens. To make sure the supply lasts, new ones must be planted each spring.

Trees grow from seeds which come from

countries all over the world. These include Russia, Greece, Scotland and Germany, to name a few. The seeds are sprouted until they form small plants called seedlings.

Two seedlings must be planted for every tree that will later be harvested at Timbuk. Some of these young trees die from diseases or bad weather. Deer and squirrels damage other trees. ➡

Right: When it is time to leave Timbuk, most people tie their trees on top of their cars.



Last spring, 35,000 seedlings were planted. Large planting machines did this work quickly. They planted about 1,000 trees an hour.

In summer, there's more work to be done. The older trees are trimmed so they will have a nice shape. Fertilizer is applied to the ground to keep the trees growing well. Weeds that would harm the trees must be removed.

Visiting a Tree Farm

Tree farms like Timbuk are found all across

the United States. Would you like to visit one? If so, you and your family will find tree plantations up and down the East Coast from Maine to the Carolinas. Other plantations can be found across the northern United States from Pennsylvania and Wisconsin to Oregon.

Most tree farmers welcome visitors at any time of year. If you go, you'll enjoy taking a look around. Sniff the clean fresh air and admire the long, lovely rows of greenery. You don't even have to buy a tree!



Left: Hannelore and her sister Susie decorate the Schmidt family tree.

The Bloodhound Gang



A Case of Trouble in Paradise

Part Two

by Madeline Sunshine

In our last episode, Vikki, Ricardo and Zack had arrived at Bill Blake's Paradise Hotel to investigate the strange illnesses that were affecting the guests. They suspected that the problem had something to do with the lake. The three young detectives set out in Blake's boat to take water samples. But they soon found themselves in danger. It was getting dark. It had started to rain. Worst of all, their boat had mysteriously run out of gas.

"It's no use," Vikki shouted above the storm. "We'll have to try paddling with our hands. I'll take the front of the boat. You two paddle on either side. Oh, and make sure the rubber gloves we got from the chef are on tight, so your hands are protected from the water," she added.

Ricardo and Zack nodded as they got to work. The winds were rough. Rain whipped against their faces. By the time they finally got to shore, they were soaking wet, and the night was as dark as

black velvet. But at least the rain had stopped.

"I need some help over here," said Zack. "I can't see where to tie up the boat."

Ricardo took out his key chain which had a tiny flashlight attached to it and switched it on. Then the three detectives tied up the boat. They grabbed the water samples they had collected. And, with the little flashlight to guide them, they started back toward their rooms.

"Look!" said Vikki, pointing toward a spot near their path. "Tire tracks!"

"Awfully wide and deep, aren't they?" said Zack.

"Yes," agreed Ricardo. "Why don't we measure the distance between the two sets of tracks. That will give us an idea of how wide the truck they belong to actually is."

"Hey, yeah," Vikki added. "Then we can measure the width of each track. That will tell us how big the tires are. Those two pieces of information may help us locate the vehicle that was out here." ➤

Measuring the Tracks

"Now if only your key chain had a ruler attached to it," Zack said to Ricardo, "we'd be in great shape."

"Who needs a ruler?" said Ricardo. "Our feet will do the job. We'll pace it off."

Ricardo held the flashlight, while Vikki paced off the distance between the tracks and the width of each track. Then, with this new clue and the water samples in their possession, the Bloodhounds went back to the hotel to turn in for the night.

The next morning, Vikki, Ricardo and Zack made a call to the Environmental Protection Agency. There, they spoke to Marge Grant, one of the field inspectors. She was most interested in the story they had to tell.

"There's a lab in town that does a lot of work for us," she told the Bloodhound Gang. "Take the water samples over to them. They'll do some tests and get the results to me as soon as they can."

Vikki, Ricardo and Zack walked into town and dropped the samples off at the lab. Then, it was back to the Paradise Hotel to investigate the tire tracks they had spotted the night before.

"No one here even has a truck," Blake informed the three young detectives. "My van's the biggest vehicle around."

"What about Joe Barker?" asked Zack.

"I couldn't tell you," said Blake. "I've never seen him in a truck, but that doesn't mean he doesn't have one. And as far as the boat's gas tank is concerned, I know it was full. I filled it myself."

"Then someone emptied it," said Vikki. "Who, besides you, knew we were planning to use the boat?"

"Only the chef," the man began.

"The chef!" Ricardo broke in. "You told the chef?"

"Yes," said Blake. "But he couldn't have had anything to do with this. He was in the kitchen from the time I told him until after 9 P.M."

"Was anyone else around while you were speaking with the chef?" asked Zack. "A guest? A delivery person? Anyone?"

A New Suspect

"Let me think . . . At one point Hank Krebs, the fellow who carts our garbage, came by."

"Does he have a truck?" asked Ricardo.

"Sure," replied the man. "A big one. But what

could he have to do with anything? He's got no gripe against me."

"Does he cart for any other resorts or hotels in the area, like Barker's for instance?" said Vikki.

"No. As far as I know his only other clients are some food packaging plants and a toy factory about a mile north of here," answered Blake.

"Hmm," thought Zack, as the Gang thanked Bill Blake and walked off. "Could it be that this garbage collector is dumping factory waste into the lake?"

"Could be," said Ricardo. "But before we check him out, I say we pay Mr. Joe Barker a visit. After all, he's the one we saw at the lake."

The Bloodhound Gang found Mr. Barker sitting under a tree that overlooked the mountainside.

"Tamper with a lake!" the man exclaimed. "Why, I love nature and people far too much to do a thing like that!"

That was pretty much the tone of their interview with Joe Barker. At the end of it, Barker suggested that, if they didn't believe his story, they speak with a friend of his who worked for the EPA. That friend turned out to be Marge Grant. And, a few hours later at the EPA office, speak with her they did.

"Joe Barker?" said the woman. "Sure, I've known him for years. He's as honest as they come."

"Well, that seems to narrow our list of suspects a little," said Vikki.

"And I might be able to narrow it even further. The test results came in from the lab," said Inspector Grant. "The chemical found in the water samples is called *toluene*. Its side effects mirror the symptoms you described to me this morning."

"What exactly is toluene?" asked Zack.

"It's a compound obtained from coal tar and oil," said the woman.

"How come we couldn't see it in the lake?" Ricardo wanted to know.

"It's a colorless liquid," the inspector said, "so its presence would be hard to detect."

A Broken Food Chain

"Can it harm the lake?" Vikki asked.

"It sure can," said Inspector Grant. "You see, the lake is a community of plants, fish and other animals. In the lake, all life depends on a food chain. For example, plants serve as food for tiny fish like minnows. Minnows serve as food for larger fish like trout. Trout serve as food for still larger fish, or predatory birds, or even humans."

"When toluene gets into the lake it can have a destructive effect on this food chain. First it will kill off the minnows. That will cut the food supply for the trout. Without their food supply, they too will eventually die. What's more, any trout that survive will carry the poison in their flesh. This means that a larger fish or bird or person that eats the trout can be affected by the poison, too."

"Whew!" exclaimed Ricardo. "That really sounds awful. What's this toluene stuff actually used for?"

"Toluene is used in the manufacture of explosives, plastics, rubber, even model airplane glue," the inspector answered.

"Model airplane glue!" cried Vikki. "There's a toy company around here. We'd better get going!"

The Gang headed for the door. As they left, Inspector Grant explained that she would be starting a full investigation at Paradise Lake. Vikki, Ricardo and Zack promised to keep in touch. Then they hurried off.

"If this toy factory uses toluene, it could be dumping the chemical into the lake instead of at a legal dump site," said Vikki.

"Why would they do that?" asked Ricardo.

"It's cheaper," said Zack. "Legal dumping grounds charge fees. It doesn't cost anything to dump the chemicals into the lake."

"Why don't we call the toy factory and find out if they use toluene?" Vikki suggested. "If they do, we'll go over and investigate."

A Promising Lead

Vikki made the call and, just as the Bloodhounds suspected, the Tandem Toy Company did indeed use toluene. However, the owner of the company assured them that he was using a licensed hauler. The trucker disposed of the chemical at a legal dump site. The Gang asked if they could speak with the hauler, and the company president agreed. He invited them to drop by that evening at seven, when the hauler was scheduled to make his next pick-up. He said he would tell his night manager to expect them.

Vikki, Ricardo and Zack hopped into a cab and arrived in front of the toy factory a few minutes early. The place seemed deserted except for a big truck. The night manager was nowhere in sight.

"Hey, that looks like the truck I've seen parked near the Paradise Hotel," said Ricardo.

"Yes," said Vikki. "And look!" She paced off the

width of the tire tracks and the distance between the two sets of tracks. "Eight paces on distance, one on width—exactly like the tracks we found at the lakefront."

"And that's not all," Zack added. "This truck doesn't belong to a licensed hauler."

"How do you know that?" asked Vikki.

"See the permit number on the side of the vehicle?" said Zack. "Well, a legal hauler would have the same number printed on the back of the truck, too. It's an EPA regulation. This truck has nothing printed on the back. It's a phony."

"Maybe we should check out what's inside," said Ricardo. "No one's around, and the doors are open. Who knows? Could be we'll get lucky."

The Bloodhounds climbed into the back of the truck and began to examine the metal drums piled inside.

"Lucky is right!" shouted Vikki. "Everything here is toluene!"

"Lucky?" said a gruff, nasty voice. "I don't think you're very lucky."

The Bloodhound Gang turned around just as the doors to the back of the truck slammed shut.

"Hey, let us out of here!" they began to shout.

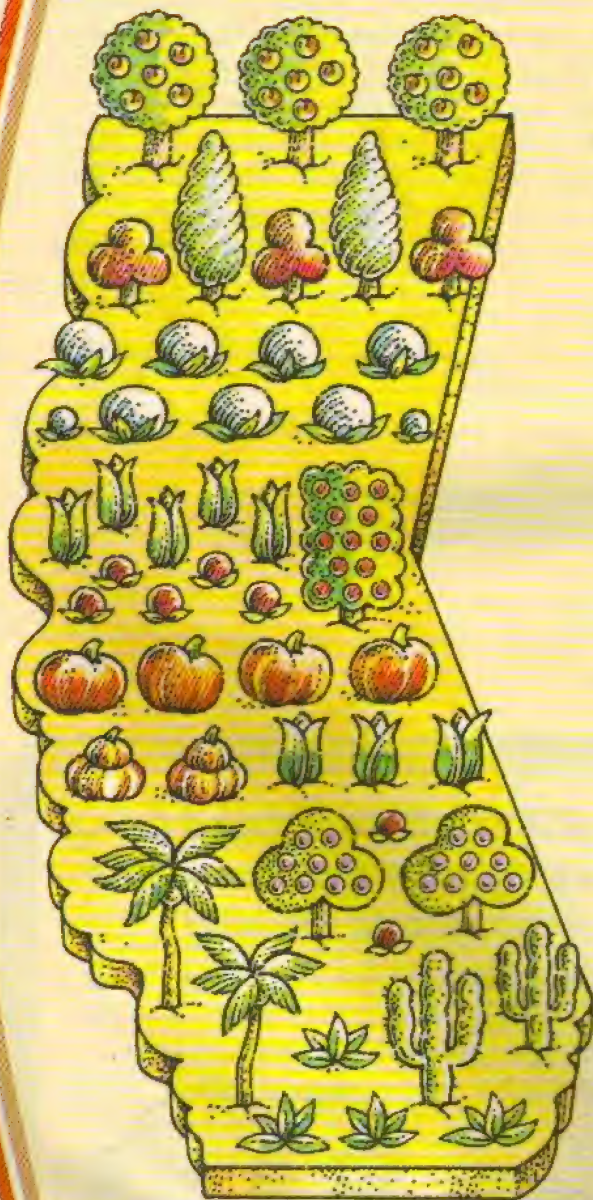
"Don't worry," said the same voice. "You'll get out all right—just as soon as I find the right place to dump you!"

Will the Bloodhound Gang escape the clutches of the treacherous trucker?

To find out, read Part Three of "A Case of Trouble in Paradise" in next month's issue of 3-2-1 CONTACT.



Factoids



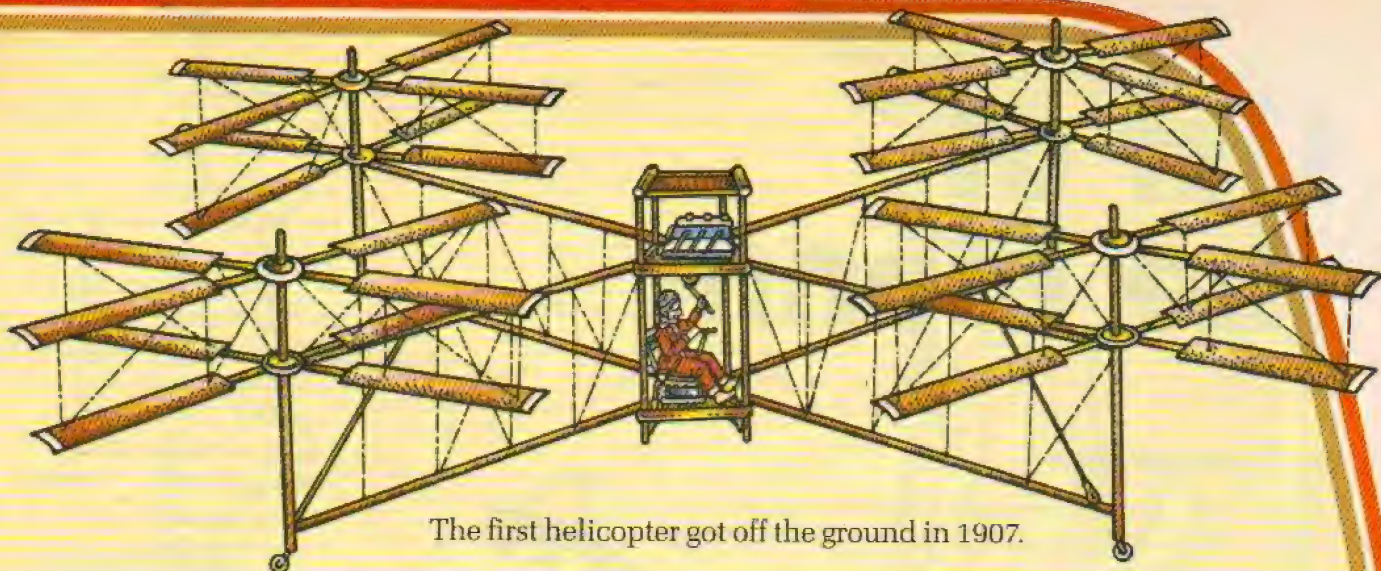
More food is grown in California than in any other state.



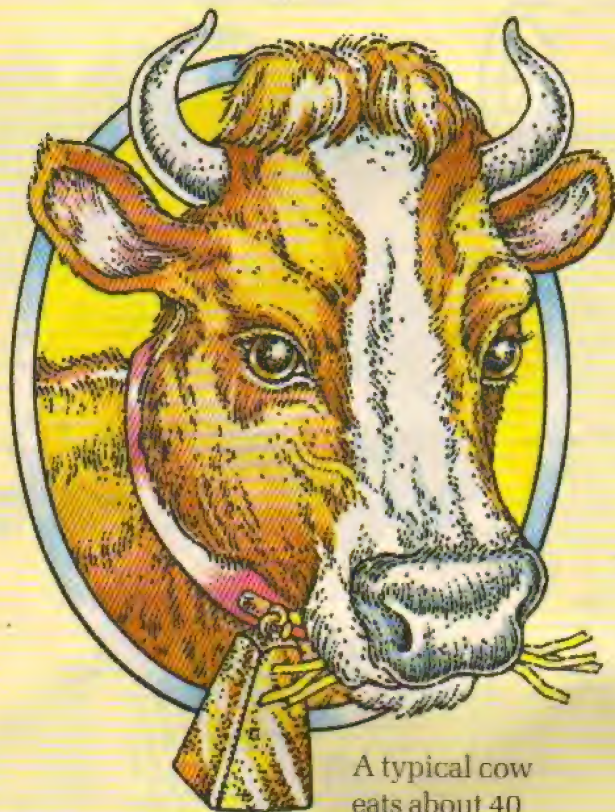
A single hair from your head can support about three ounces before breaking.

The strongest wind ever recorded blew 231 miles per hour at the top of Mount Washington, New Hampshire, in 1934.

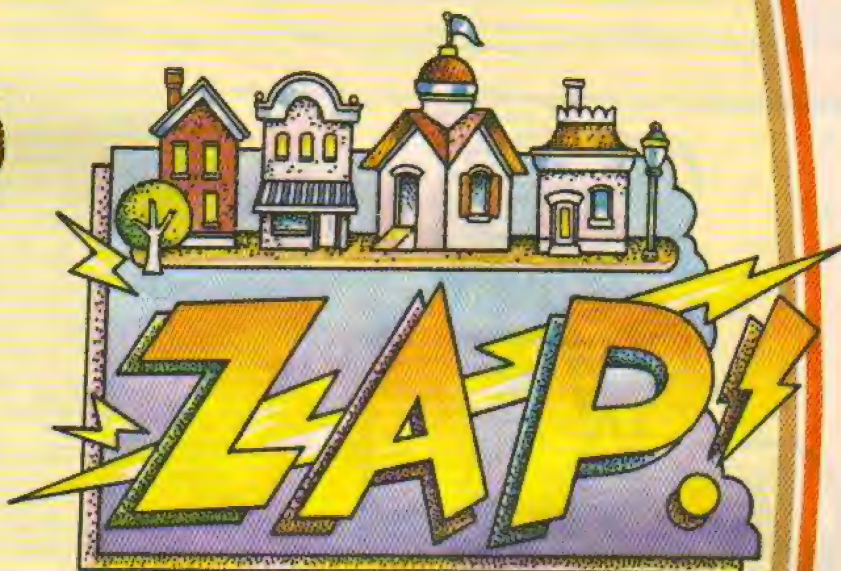




The first helicopter got off the ground in 1907.

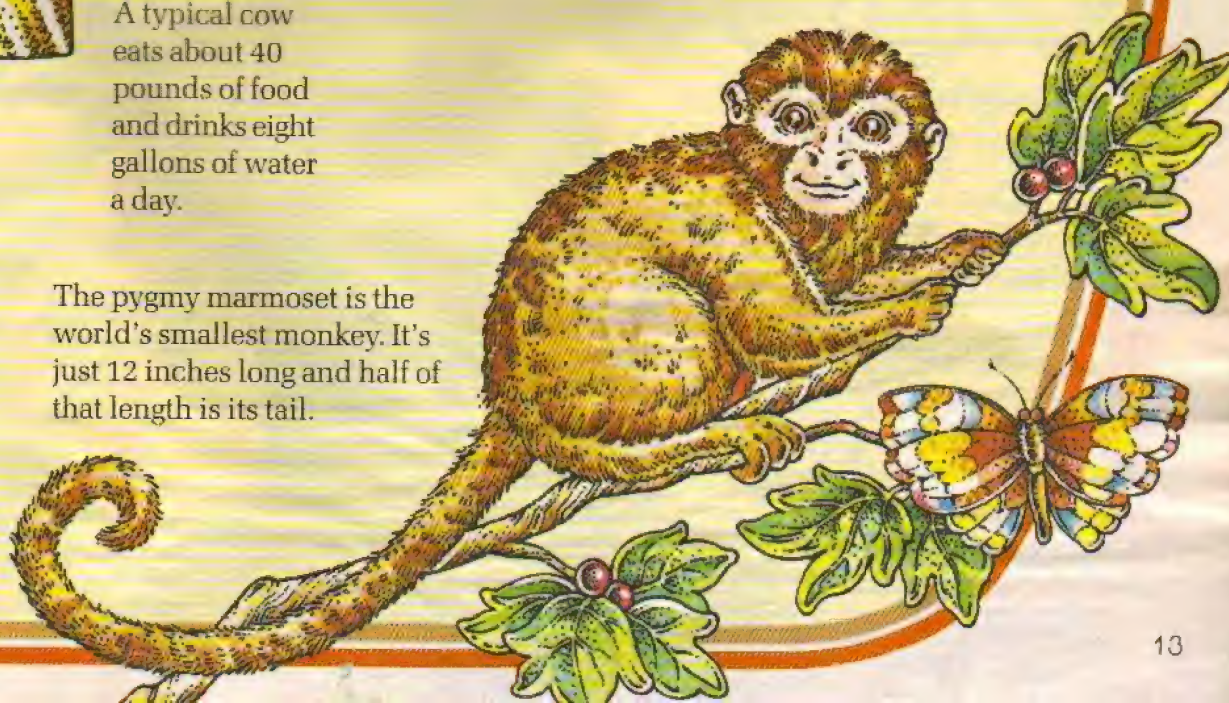


A typical cow eats about 40 pounds of food and drinks eight gallons of water a day.



There is a town in North Dakota named Zap.

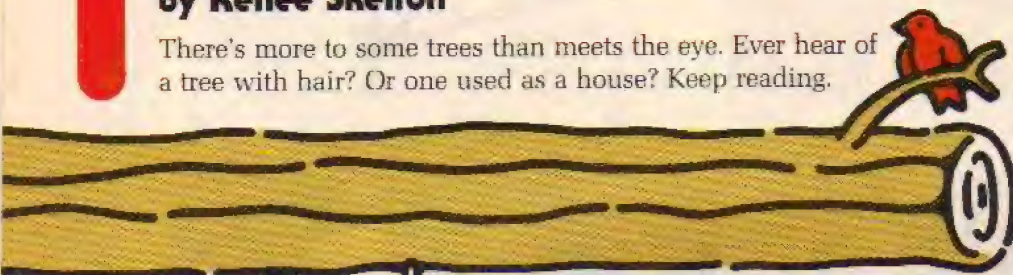
The pygmy marmoset is the world's smallest monkey. It's just 12 inches long and half of that length is its tail.



List of the Month Tremendous Trees

by Renée Skelton

There's more to some trees than meets the eye. Ever hear of a tree with hair? Or one used as a house? Keep reading.



Light Lumber The wood from balsa trees is just about the lightest wood there is. A person could carry a balsa trunk 15 feet (4.5 m) long and 20 inches (50 cm) wide with no trouble at all! When first cut, balsa is spongy and full of sap. After it dries it becomes lighter. Though balsa doesn't weigh much, it is very strong wood. That makes it perfect for building things like boats and airplanes.

Pint-sized Pines Who ever heard of a person as tall as a forest? People in New Jersey have. They don't have giants there. But they do have a very short forest of pitch pines. These trees usually grow pretty tall. But in this case they are barely six feet (1.8 m) high.

No one is certain why these pines are so small. It may be that frequent forest fires, or poor, sandy soil has something to do with it.

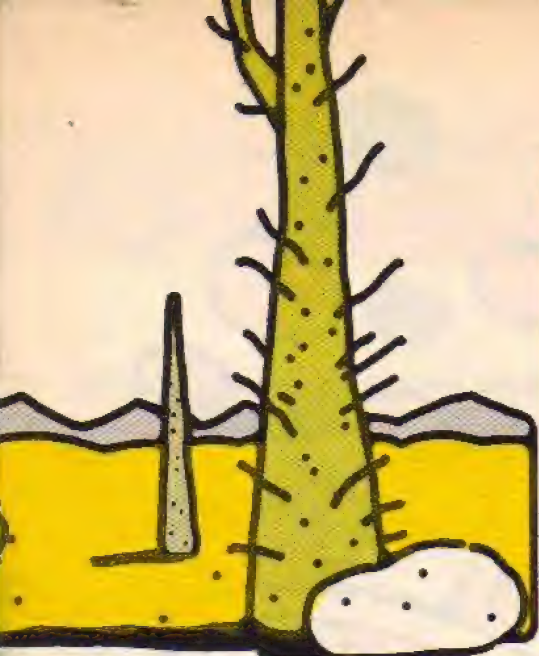


Strange Cirio What's tall as a telephone pole and shaped like an upside-down carrot? The cirio tree. Most cirios are straight and branchless. But some bend into loops. Others have one or two branches sticking out at weird angles. These trees live only in the desert of Mexico's Baja Peninsula. Like many desert trees, cirios store water. A waxy coating keeps the water in and protects against heat.



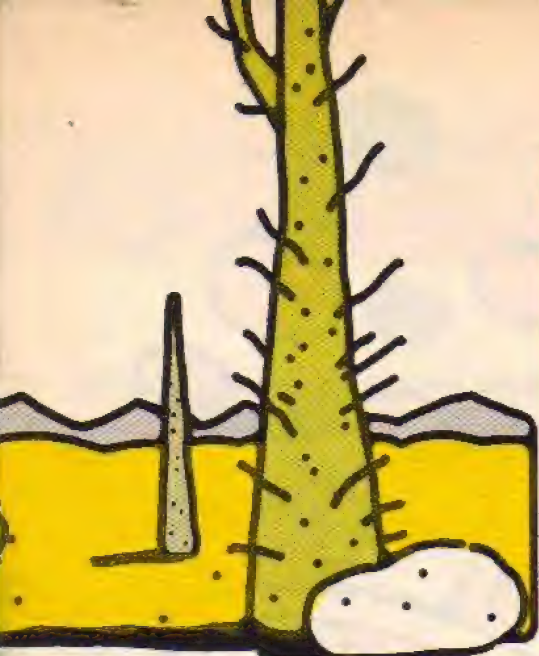
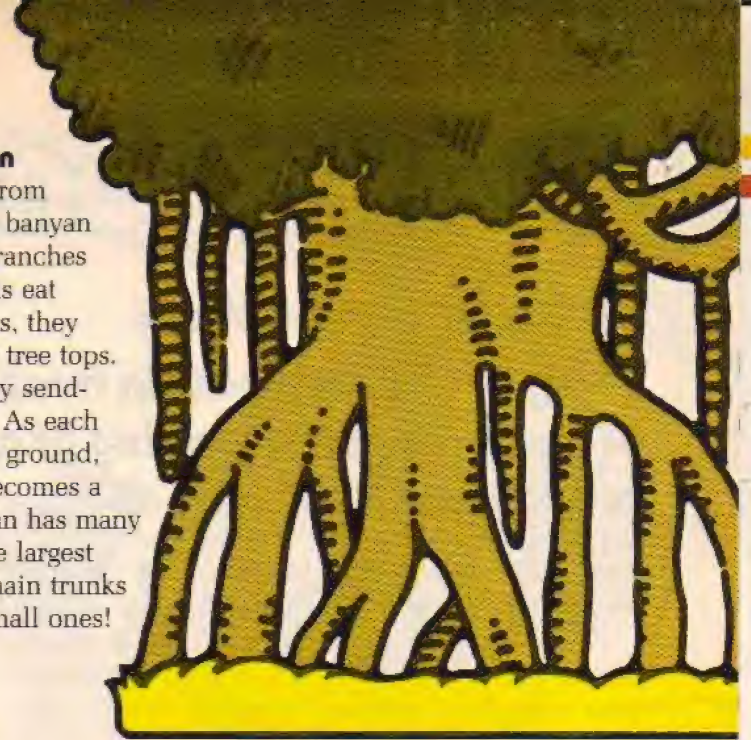
Tree House The baobab is known as the "upside-down tree" because of its looks. This African tree has branches that look like roots sticking up into the sky.

Even odder is the baobab's trunk. It's big, fat and filled with water. The largest trunks measure 60 feet (18 m) across and hold thousands of gallons of water. People sometimes hollow out these big trunks and use them for houses!




Branching Banyan

Most trees grow from the roots up. The banyan grows from the branches down. When birds eat fruit from banyans, they drop seeds in the tree tops. The seeds grow by sending down shoots. As each shoot reaches the ground, it thickens and becomes a trunk. Each banyan has many trunks. One of the largest banyans has 35 main trunks and over 3,000 small ones!




Tree Stuffing

Kapok trees grow in tropical Asia. These trees produce a white, silky fiber called—what else?—kapok. These fibers are light and waterproof. People use them to stuff lots of things, including pillows, life preservers, sofas, chairs and sleeping bags. So even though you'll never see a kapok tree in your neighborhood, there's a chance you have a little kapok in your home.




Ancient Trees

Bristlecone pines are the oldest living things on earth. On the average, these trees live about 3,000 years. The oldest one can be found high in the Nevada mountains. It was around before the Pyramids were built in Egypt 4,500 years ago. The harsh climate of the mountains keeps some of the oldest trees quite small. A 1,000-year-old bristlecone might not be much taller than you!



A Puff of Tree

The smoke tree's branches are thickly covered with tiny gray hairs. From a distance, the tree looks like a puff of smoke. Smoke trees are well-adapted for the desert. Their seeds have tough shells. That's important. The seeds only open when carried by spring floods and smashed against rocks. It's the only time there's enough water to allow the seeds to grow into trees.



Any Questions?

by Susan Meyers

Why do you see spots in front of your eyes after looking at a bright light?

The answer to this question is not in front of your eyes, but inside them. That's where cells sensitive to light are located. These cells contain a chemical called rhodopsin (row-DOP-sin).

When light enters your eyes, the rhodopsin goes through a chemical change. It carries a message to your brain about what you're seeing. Usually, the light-sensitive chemical changes back in the blink of an eye. Then it is ready to send more messages.

But when your eye sees a bright light, such as the flash of a bulb, things slow down. The rhodopsin has been exposed to too much light. When this happens, it takes several seconds to return to normal. You see the over-exposed areas of rhodopsin as spots before your eyes. They disappear as soon as the chemical recovers and can send messages to your brain again.

Question sent in by Julie Vlaming, Orland Park, IL.



How much does the sun weigh?

The sun weighs as much as 330,000 earths. Add up all those earths, and you get two billion, billion, billion tons. That's a two with 27 zeroes after it. Of course, there are no gigantic scales in space on which to weigh the sun. So how did people come up with the answer?

It all began more than 300 years ago, when Isaac Newton discovered gravity. He figured out that the earth was like a giant magnet, pulling on everything on the planet. The more the earth pulls on something, the more it weighs.

Newton realized that all the objects in the universe are pulling on each other, too. The earth, for example, pulls on the moon. That's why the moon stays in orbit around the planet.

The earth and the sun also pull on each other. Using a math formula, Newton found out how much. Then, using the answer and another formula, Newton was able to estimate how much the sun weighs.

Question sent in by Rusty Rogers, Indianalantic, FL.



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
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Why do dogs shed their hair?

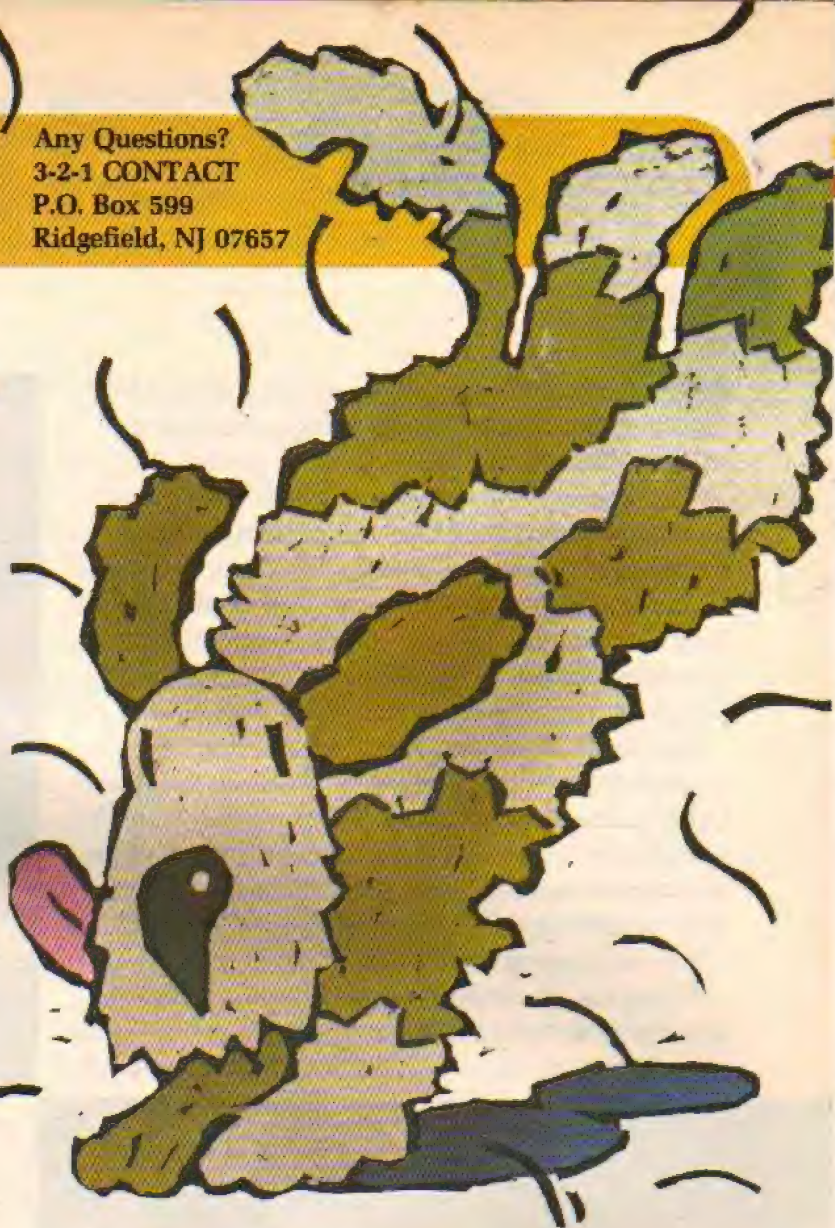
If you have a dog at your house, you *know* dogs shed! Hair on the rug, hair on the sofa. It's a wonder there's any left on the dog!

Most dogs shed because their hair has a natural life cycle. Each hair grows to a certain length and then stops. After a time, the old hair falls out, and a new one grows in its place.

How does this cycle work? Hormones carried in the bloodstream probably have something to do with it. But they're not the whole answer. As you've probably noticed, your dog's hair doesn't all fall out at once. This means that each hair must have its own growth cycle. Something in the cells of the skin tells some hairs to grow in while others fall out, so your dog is never left hairless.

Light affects the *amount* of hair a dog sheds. In the spring, days grow longer and warmer. So dogs shed more. When days grow shorter and cooler they shed less. House dogs, living under electric lights, tend to shed all year round.

Question sent in by Deborah Mann, Woodridge, IL.



What are whirlpools? Did you ever watch water go down the drain in your bathtub? That spinning water is a whirlpool.

Whirlpools happen whenever water spins in a circle. In your tub, this is caused by a combination of two forces. Gravity pulls the water down. At the same time, the spin of the earth causes the water to spin, too.

Of course, your tub isn't the only place where whirlpools form. If the bank of a river is curved, it might cause water to move in a circular path. In an ocean, two different currents of water can collide and form a whirlpool. If rocks or the tide get in the way of an ocean current, they can cause this to happen, too.

Sailors once feared whirlpools. They thought that their boats could be sucked into them. It's true that whirlpools can be dangerous to some small boats. But most modern boats are too big to be swallowed up by these watery merry-go-rounds.

Question sent in by Jonathan Barnett, Wynnewood, PA.



Contact Report

Astro Ants? No joke. High school students from Camden, New Jersey, are planning to send an ant colony up on the space shuttle.

The students chose carpenter ants. These insects have a hard shell that will protect them from the stress of the space shuttle's lift-off and return.

Student Terrence Bleviss says, "We want to see how a social creature functions in zero gravity." The ants may provide some clues about how people in future space flights will behave.

One team of students designed and built a 25-inch (63-cm) container to hold the ant colony. Other students took charge of the ants and figured out what will be needed for their survival. Another group built and programmed a tiny computer. It will regulate lights and cameras for taking pictures of the ants during the flight.

When the space shuttle goes up again in February, it will be 3-2-1 lift off for the ants!

—Written by Nora Zamichow



These students are sending ants into orbit.

Astro Plants Eating lunch aboard a space craft is fine if you like packaged food. But fresh salads? Forget it! One day, however, space pioneers may be able to grow their own greens, thanks to Kelly Hunt.

Kelly is a Utah high school student who entered a contest for the best experiments to go up in the space shuttle. She decided to study how plants might live in space.

Because space has no gravity, plants won't know up from down. So Kelly wondered how they would know in which direction to grow. The plants she chose for her experiment were small green duckweeds. Later, they may pave the way for growing more commonly eaten plants in space.

Kelly's idea was a winner. Last June, the duckweeds were on board when the space shuttle took off. After the flight, the plants were carefully preserved. Now Kelly has to figure out what happened to her duckweeds while they were out of this world!

—Written by Nora Zamichow



Kelly hopes to find out how plants grow in space.

Contact Report

More Trash? No, Trashmore What's a mountain of garbage good for? Not much. Unless it's Virginia's Mount Trashmore, that is.

This mini-mountain is a great place to hike, skate, ride a bike or have a picnic. It's covered with grass and stands in the middle of a park near the city of Virginia Beach.

About 15 years ago, a public health official named Roland Dorer learned that local people were throwing away nearly 1,000 tons of garbage every day. That was enough to make a small mountain, he thought. So Mount Trashmore was born.

Day after day, the city's trash was piled up in layers. Each layer was covered with a layer of dirt. To keep the trash and dirt from blowing away, each layer was tightly compacted, or pressed together. Today, if you could dig below the topsoil and get one cubic foot (.3 m) of this mountain onto your shovel, you'd have trouble lifting it. Each cubic foot (.3 m) of tightly pressed trash weighs over 100

pounds (450 kg).

While the mountain was going up, it attracted flocks of hungry seagulls. They scratched at the top layer of trash and made quite a mess. No one knew what to do. Finally, kids from local schools came to stand guard. When the gulls showed up again, the kids exploded firecrackers. The birds soon went looking for a quieter place to dig up a meal.

Today, Mount Trashmore is a grassy monument to successful recycling. There are playgrounds, a soap box derby raceway and two skateboard rinks. You can play tennis there. You can also boat and fish on two different lakes. And you can climb all over the world's cleanest pile of trash. In fact, the place has become so popular that Virginia Beach is building a second, larger mountain of trash.

Now cities in Texas, Ohio, New Jersey and Maryland are also picking up on the idea. They are recycling their garbage to build Mount Trashmores of their own.

—Written by Ron Carter



Trash can be recycled to make useful land.

What's That? Have you read about a kid who invented something new? Or one who set a new science record? Then cut out the story and send it to us. If we use it you'll get a CONTACT T-shirt. Include your name, address, T-shirt size and the newspaper or magazine the story came from. Write to:
The Contact Report
P.O. Box 599
Ridgefield, NJ 07657

DAYS IN A MAZE

321 CONTACT

POSTER

START

JANUARY
S M T W T F S
1 8 5 2 9
7 4 1 2 2
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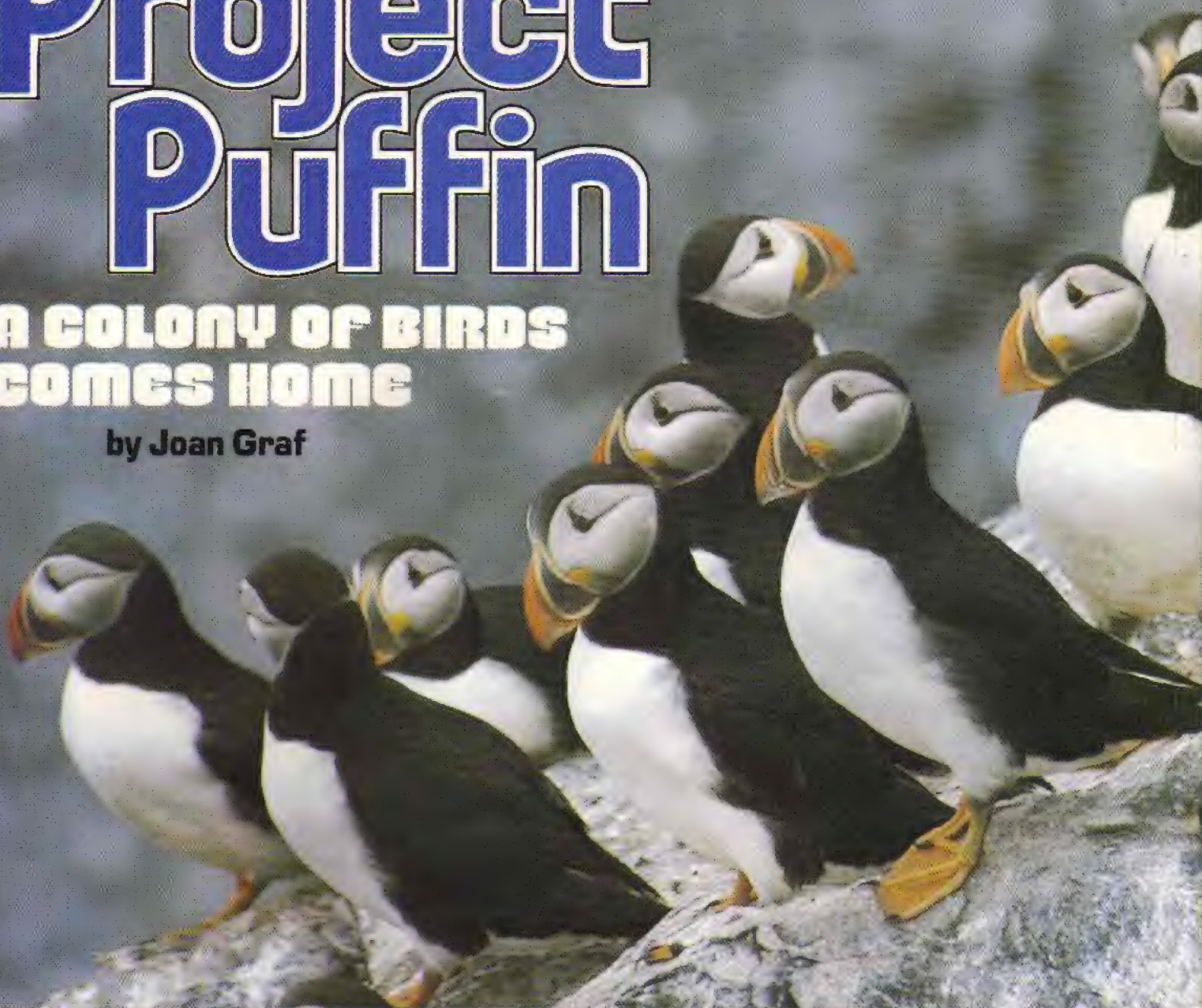
THIS CALENDAR IS ALSO A MAZE. CAN YOU FIND YOUR WAY FROM START TO FINISH?

Answer on page 37.

Project Puffin

A COLONY OF BIRDS COMES HOME

by Joan Graf



If you saw a puffin, you might laugh at the funny-looking little bird. But when Steve Kress saw a puffin two years ago, he was very excited. Dr. Kress, a scientist who studies birds, had seen lots of puffins before. But this one was different.

The puffin was landing on a rocky island, called Eastern Egg Rock, near the Maine coast. Steve was watching from a hidden spot. He saw that the bird's beak was filled with fish. That meant the puffin must have a hungry chick waiting for food. Sure enough, the bird ducked into a crack between some rocks. It was carrying food to its chick hidden in an underground nest.

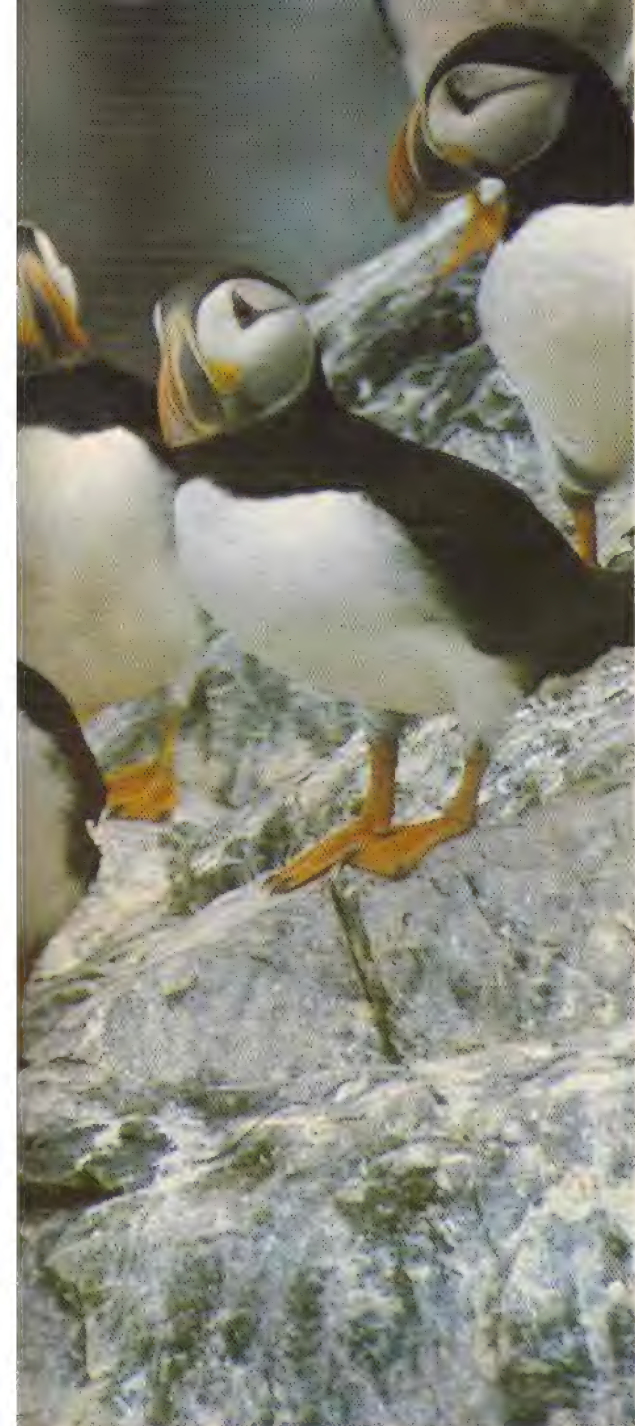
What a happy day that was for Dr. Kress! He had just seen the first puffin to be raising a chick on

this island in over 100 years. Steve and many of his helpers had worked for seven years to bring puffins back to Eastern Egg Rock. Seeing this bird seemed proof that Project Puffin would succeed.

Project Puffin

The puffin looked very much at home on the island. No wonder—a large group, or colony, of them lived there long ago. But then, some people began collecting puffin eggs and hunting the birds for their feathers. Other people used the birds as fishing bait. By 1880, the puffins of Eastern Egg Rock were wiped out.

Steve Kress was interested in their fate. He could imagine puffins living on the island again



Above: Puffins brought to Eastern Egg Rock wear numbered bands on their legs. Scientists use these numbers to keep track of returning birds.

Below: Scientist Steve Kress is the head of Project Puffin. Here you see him collecting puffin chicks for the project.

Above: A group of puffins gather on Eastern Egg Rock Island. These sea birds now come here to raise their young.

and raising their young. So, with the help of the National Audubon Society, he created Project Puffin. It was his plan to help the birds start a new colony there.

Dr. Kress knew that a puffin usually returns each summer to the island where it lived as a baby. He figured that he should bring some young puffins from another colony to Eastern Egg Rock. Then they would learn to recognize this new island as their home. If his plan worked, these puffins would return to ➡



the island in future summers to raise chicks of their own.

Steve collected several two-week-old puffins from a large colony near the coast of Canada. They were taken to the island. There they were put in nests that he and his students dug in the ground. Then the students camped out on the island for the summer.

Every day, the puffin team left small fish for the baby puffins to eat. A puffin chick can easily eat its own weight in fish each day. That's a lot of seafood! Sometimes the students put some vitamin pills inside the fish to help the little puffins stay healthy.

Tricking the Birds

When little puffins are about 40 days old, they begin leaving their burrows at night. They're going out to exercise their wings. One night, they leave the island and head out to sea. For the next two years, they will swim on the waves and fly over the ocean. Eventually, they will return to land.

To encourage these puffins to return to Eastern Egg Rock, Steve's team had to fool the birds. Puffins like to live around other puffins. So Dr. Kress wanted to make it seem that the island already had lots of puffins living there. He put decoys—wooden models that look like puffins—on rocks and in the water. One year he even placed a four-sided mirror on a rock. Lots of puffins gathered at the mirror to check out the "other birds" they saw reflected there.

Steve also played some other tricks. He wanted to drive away the seagulls which stay around the island and gobble up puffin chicks whenever they get a chance. To do this, he got some help from other seabirds called terns. Just like puffins, terns once lived on the island. Dr. Kress wanted them to come back because terns are very tough little birds. They would help keep the gulls away.

The puffin team set out tern decoys. They also played tape recordings of the noisy calls that terns make. Soon the terns accepted the invitation. For the first time in over 40 years, they nested on Eastern Egg Rock.

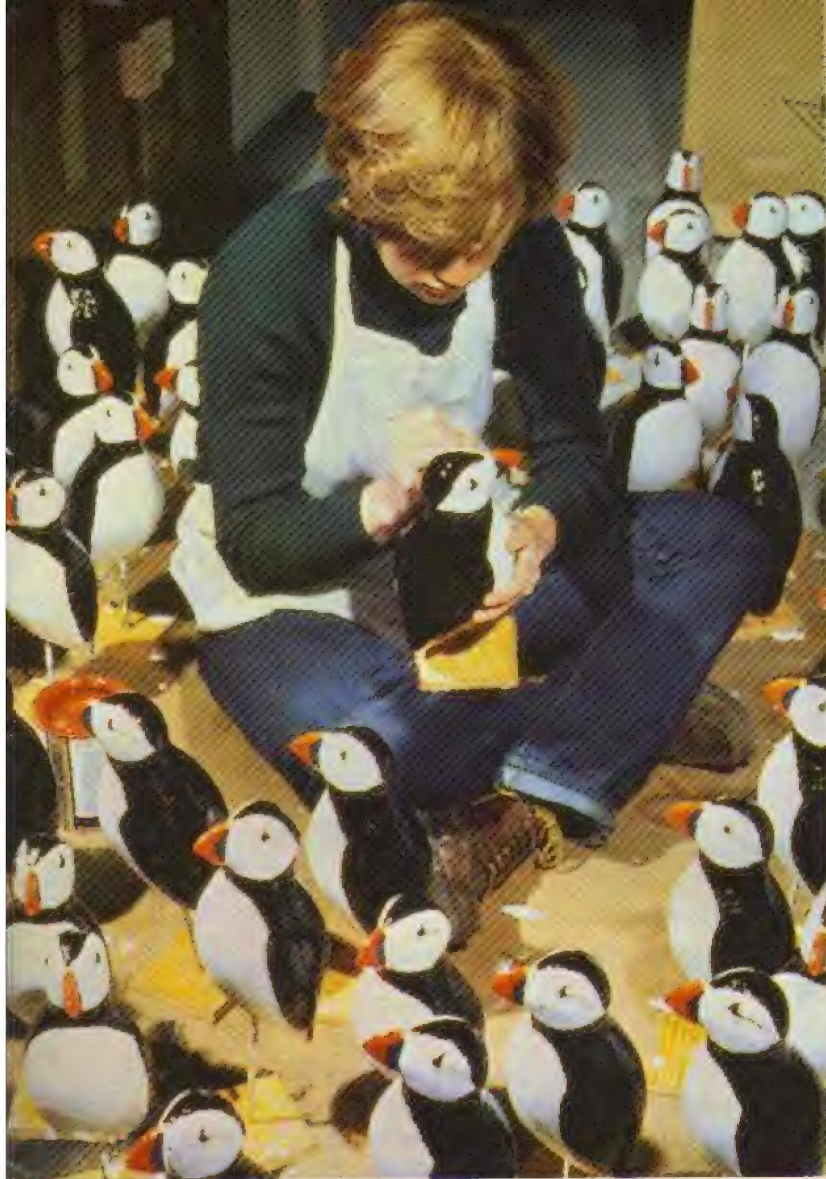
All these tricks seemed to work. Since Project Puffin was started, more than 700 chicks have been brought to the island and raised by teams of students. Steve was excited when some puffins began returning to the



Above: Adult puffins catch fish and then bring them back to Eastern Egg Rock to feed their young. Puffins can carry as many as 30 fish in their bills.

Below: Two volunteers collect and weigh puffin chicks.





island in later years. But he still wasn't sure the project would be a success.

Dr. Kress had to wait a long time because puffins don't usually breed until they are about five years old. Would they actually return and raise chicks on the island? The first breeding puffin he saw two years ago was a sign that they would indeed. Steve thought the sight was spectacular.

Puffins in Trouble?

Puffins, like many other seabirds, like to live together in large colonies. Group living works well for them in some ways. The puffins can protect each other against enemies such as gulls. But living together also creates a special danger. If pollution or an oil spill covers the sea near the colony, thousands of puffins can die very quickly. Or if people catch too many fish in the area, the birds may starve.

Scientists are now worried about puffin colonies near Norway and Canada. In 1981, many puffin chicks from the Canadian colony died—the same place that earlier had provided the chicks for Project Puffin. These puffins couldn't find a special kind of fish that their babies needed. So many of the chicks starved.

Because entire puffin colonies could be ➡

Above: Puffins like to live in groups. To attract more of them, wooden models, called decoys, were made. It was hoped that these models would trick more birds into coming to the island.

Right: A puffin gives a decoy an extra close look.





wiped out quickly. Project Puffin is especially important. Steve Kress and his helpers have shown that new colonies can be started in safe areas.

The small colony at Eastern Egg Rock now has a good start. Last summer, Dr. Kress decided not to bring any new puffin chicks to the island. Since the birds have started to raise their own young, they shouldn't be

disturbed by human visitors.

"It's time to turn the island over to the puffins," he says.

Above: Mirrors were also used to keep puffins on Eastern Egg Rock from feeling lonely.

Below: Two puffins have a chat. Because of their bright bills, puffins are sometimes called sea parrots.



Tree Word Hunt

There are 1,182 different kinds of trees in the United States. Hidden here are just 26 of them. They are across, up and down and diagonal. Some are backward. Happy hunting!

ASH
BEECH
BIRCH
CEDAR
CHESTNUT
DOGWOOD

ELM
FIR
GINKGO
HICKORY
JOSHUA
JUNIPER

LOCUST
MAGNOLIA
MAPLE
MULBERRY
OAK
OLIVE

PALMETTO
PINE
POPLAR
REDWOOD
SPRUCE
SWEETGUM

SYCAMORE
WILLOW

**Answers
on page 37.**

D	W	K	R	O	T	T	E	M	L	A	P	Z	Y	H
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D	K	Z	J	O	L	I	V	E	P	O	A	I	Y	O
E	L	Y	N	G	O	G	K	N	I	G	Q	R	Y	R
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A	V	F	C	K	U	A	H	P	N	A	R	Z	B	X
P	I	S	A	C	M	S	O	M	R	T	P	K	L	B
L	H	O	O	O	O	N	G	L	A	P	S	Q	U	F
E	S	L	R	J	U	N	I	P	E	R	M	E	M	D
T	P	E	D	M	U	G	T	E	E	W	S	P	H	T
N	M	U	P	O	P	L	A	R	K	R	A	D	E	C

Fighting Germs

by Kim Solworth Merlino

Too much sun or too much cold can make you sick. Too much candy makes you sick, too. Falling off a bike can make you ache all over. But the biggest trouble-makers for your body are germs. Germs are small. But when they get inside you, they can cause more trouble than the neighborhood bully. Fortunately, you have your own ways of fighting back.

Friend or Foe?

Germs are living creatures. They are so tiny that you need a powerful microscope to see them. There are thousands of kinds of germs in the world. Some live only in soil. Others float in water or through the air. Some germs live inside animals, including people.

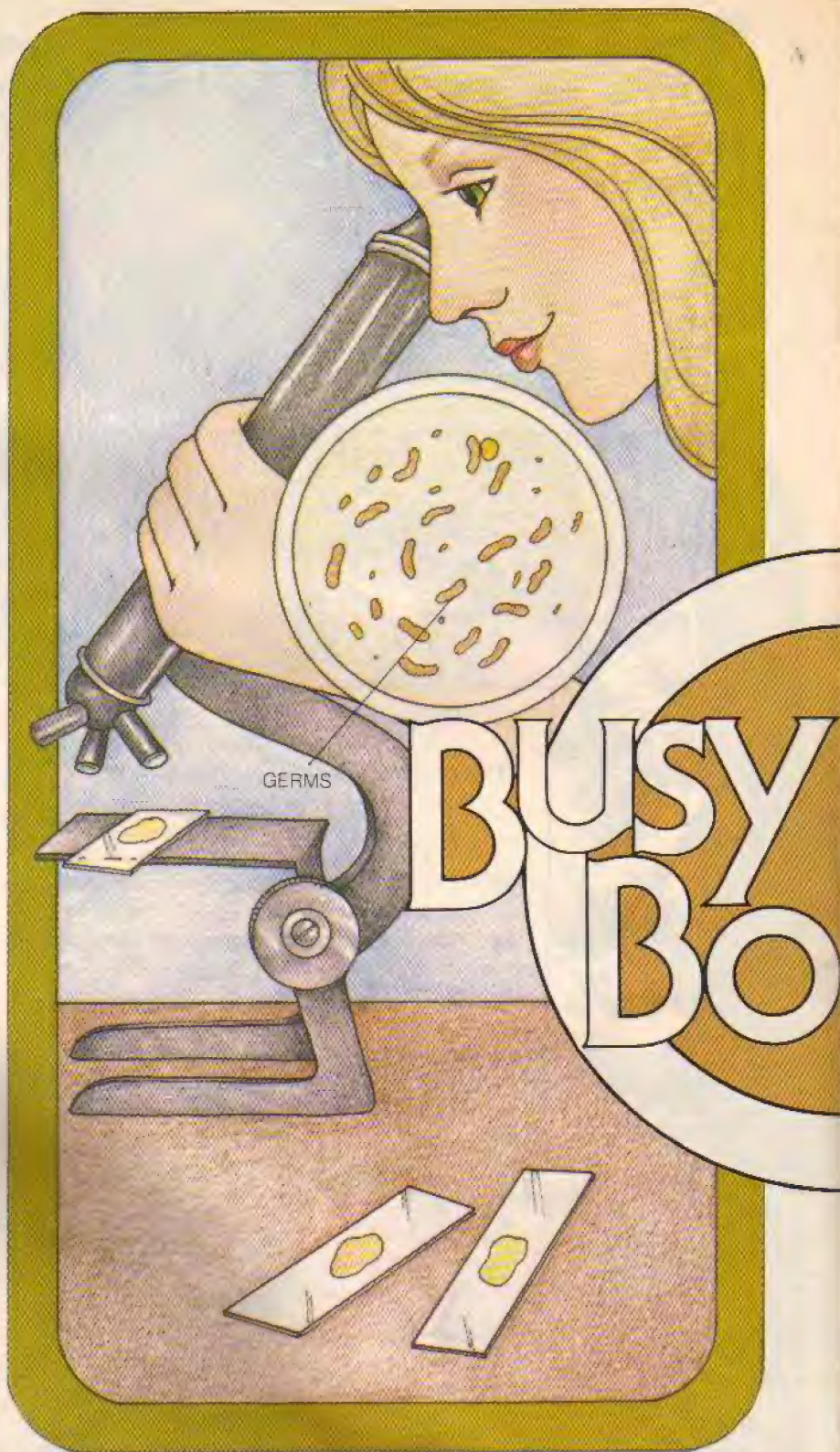
Not all germs are harmful to humans. Some are really helpful. Special germs change milk into cheese, and grape juice into wine. Yeast is a germ needed to make bread. Germs living inside your intestines help you digest food.

Nasty Germs

The two groups of germs that cause most kinds of sicknesses are *bacteria* and *viruses*. Bacteria are very small one-celled living things. How small? Fifty thousand bacteria could fit on the head of a pin—without crowding each other! Bacteria grow best in warm, dark, moist places—like inside your ears or lungs or under your skin.

As the bacteria grow, they produce wastes called *toxins*. The toxins enter the bloodstream and travel to other parts of the body. It's these toxins that make you ill. You may get a headache, fever, feel sick to your stomach or get a rash. Earaches, sore throats, even pimples, may be caused by bacteria.

Bacteria are giants, compared to vi-



uses. These germs are so tiny that several thousand of them could fit inside one bacterium! These pint-sized germs also produce toxins. The toxins give you rashes, aches, pains and fevers. Colds, the flu, measles and mumps are all examples of diseases caused by viruses.

dies



Meet Your Defenders

Your skin is the first line of defense against germs. Germs cannot get through your skin. It's too thick and tough. Unless the skin is cut, germs can only get inside the body through one of the natural openings—like the nose or mouth.

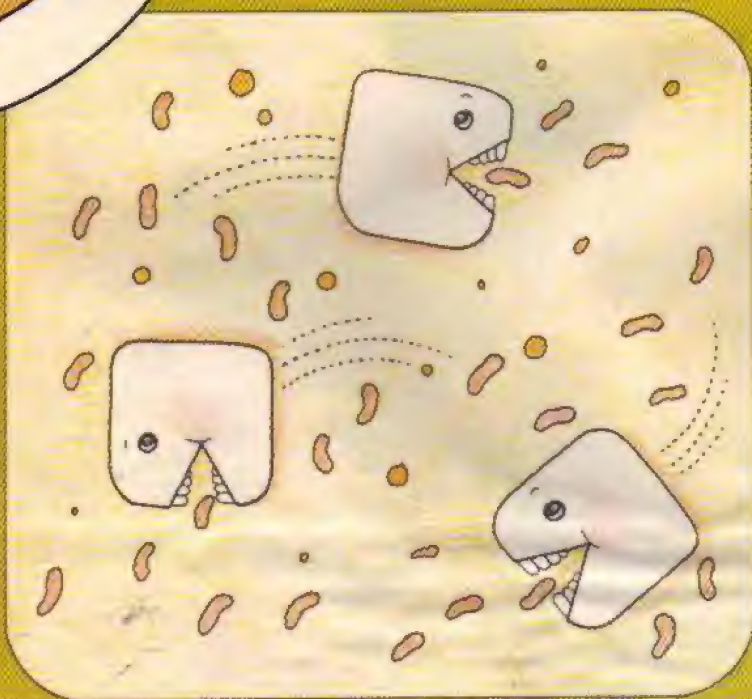
Look inside your mouth with a mirror. Open wide! Can you see those two fleshy bulges on either side of your throat? They are your tonsils. They stand guard at the entrance to the throat. They stop many germs from getting by. Tonsils are only one set of many pairs of lymph nodes in your body. Lymph nodes swell when germs have made you sick. The swelling means they are working overtime to manufacture germ-killing cells.

Germs that sneak past the tonsils are swallowed. They travel down the food tube to your stomach. In the stomach are some strong acids. The acids will kill most germs.

Okay, back to the mirror. Look in your nose. Those tiny hairs you see inside guard the entrance. They catch bits of dust and germs that float in the air you breathe. The lining of your nose produces a sticky liquid, called mucus. Germs also get trapped in this mucus. Then tiny hairs sweep the mucus down your throat. The mucus is swallowed, and stomach acids get to work. You can also get rid of trapped germs by blowing your nose or sneezing. One good sneeze clears your nose of many unwanted germs by blasting them right out of you!

Blood to the Rescue

Even with all these protections, some germs manage to get inside your body and start to grow. That's when your blood gets into the act. Your blood may look red, but it is really a mixture of red and white cells. White blood cells are "eating cells." And what do they eat? Germs! When you cut yourself, germs get into your skin. But the white blood cells surround the germs and swallow them up. They also clean up the area of any dead cells, so that your cut can heal properly. ➤



Watch Out Germs!

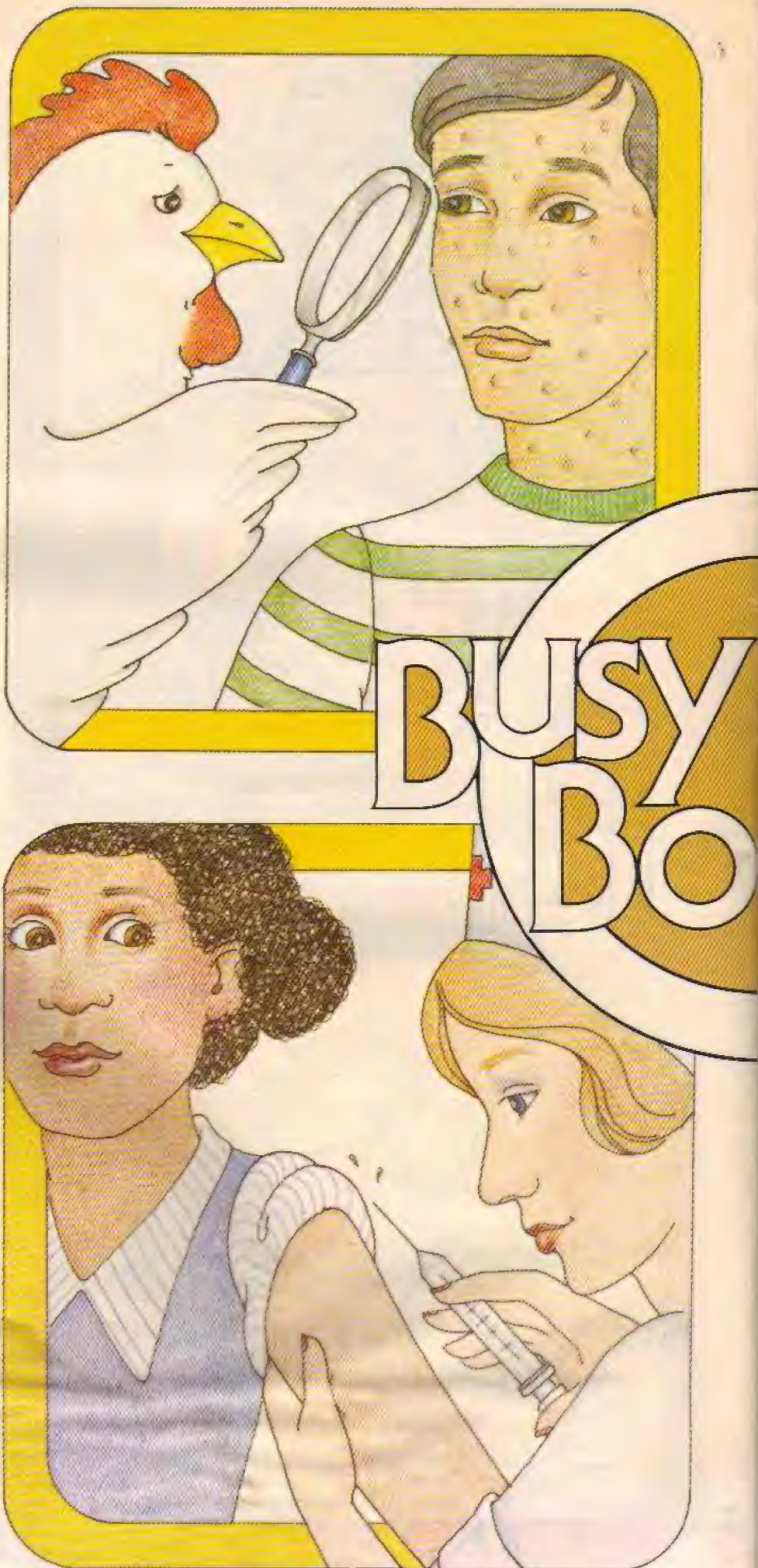
Your body has even another way of fighting germs. After germs have entered the body, special chemicals are made that can destroy that kind of germ. These chemicals are called **antibodies**. When you are sick with the chicken pox, your body makes antibodies that can kill the chicken pox virus. When the battle is over, and the viruses are defeated, you feel better. Even after the illness is gone, the antibodies stay in your blood. They are always on patrol, ready to destroy new chicken pox germs that might appear. Because they stay with you your whole life, you'll never get the chicken pox again.

But you can get the mumps! Each antibody only works on one kind of germ. Every time you get a new sickness, you add another antibody to your collection of protectors. You get colds year after year because there are so many different cold germs. Scientists have already identified more than 200 cold germs! They discover more each year.

Oh No! Shots!

When you are young, it seems as though doctors give you shots every time you see them. Doctors give kids shots to prevent disease. The doctor injects a small amount of a weakened virus into a healthy person. The shot is called a **vaccine**. The germs have been weakened by being heated, aged or even killed. They are not strong enough to make you sick or spread disease to other people. Even though they can't hurt you, your body makes the antibodies that can kill that kind of germ.

The antibodies stay in your blood a long time, probably the rest of your life. If the same kind of germ ever gets in your body again, your antibodies attack it before it can make you sick. The doctor gives you one or two vaccines a year. By the time you are fully grown, you have a large collection of germ-fighting antibodies in your body. As an adult, you will hardly need any shots at all.





Shivers and Shakes

Sometimes when you're sick, you feel hot and cold at the same time. A fever is one signal that you are sick. Even though your skin feels hot, you may start to shiver. Shivering is the body's way of raising your temperature. The shaking muscles produce heat.

Doctors are not sure what causes the fever or why you get it. One theory is that the germs themselves cause the fever. The germ toxins reach the temperature control center of the brain, and the center turns up the heat.

Whatever the cause, that extra heat helps you fight germs. It makes the blood travel faster around your body. The blood can carry germ-eating cells and antibodies to the infection faster.

Slight fevers may be helpful in fighting the germs. But a very high temperature can be dangerous. Taking aspirin as directed or sitting in a cool bath are the best ways to lower a high fever in a hurry.

Look Mom, No Cavities!

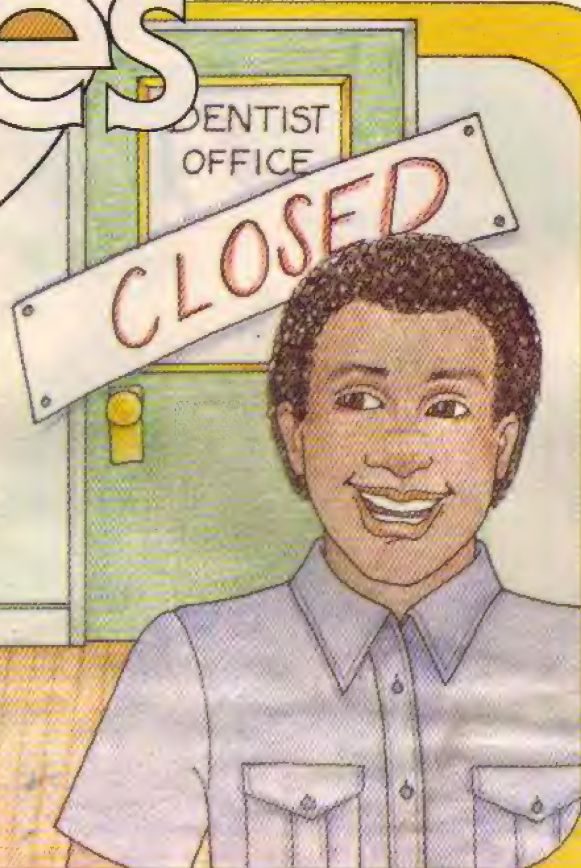
By now you are probably getting the picture. Your body is bombarded by different kinds of germs all the time. Thanks to your various defenses, you are protected from most of them. But there is even better news. New discoveries are being made all the time. So the defenses against germs continue to grow.

Imagine going to the dentist without having to get your teeth drilled. You might almost enjoy the visit! Scientists are working on a new vaccine that will help you do just that. Someday soon, all babies may be given a shot that will prevent tooth decay for the rest of their lives.

One of the many causes of tooth decay is a kind of bacterium. This germ changes sugar in your mouth into a kind of glue. The glue helps the germs hold on to your teeth. While they live attached to your teeth, the germs produce chemicals that eat away at the tooth surface. The new vaccine stops the germs from making the glue. Without a way to hold on, the germs are swallowed and killed by stomach acids.

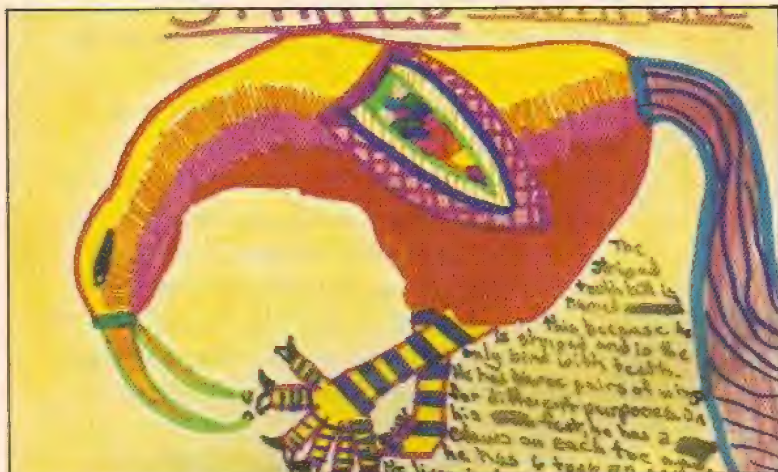
So far the anticavity shot has been tried on other animals, but not humans. But someday a single shot may save you from a lifetime of dentist's drilling.

dies



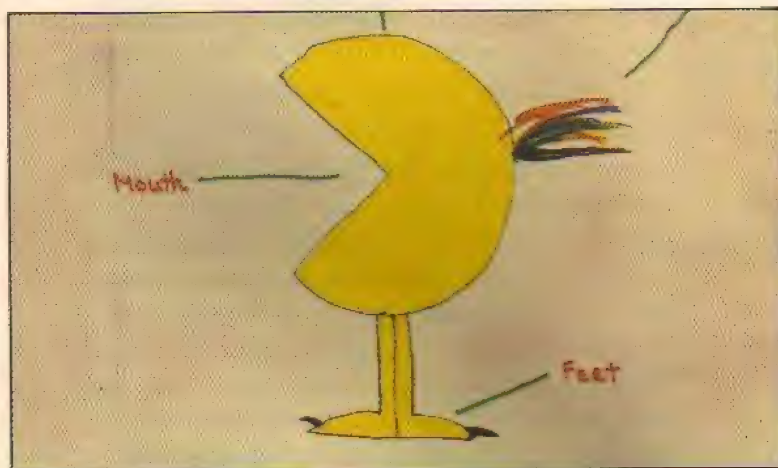
MAIL

Strange Birds Here are our favorites of the unusual birds you sent us.



Christine Hirtle, Littleton, CO.

The Striped Tooth Bill is the only bird with teeth. It lives in Arabia and eats small livestock.



Stephen Jones, Rainsville, AL.

The Pac-Bird lives in game rooms all over the world, eating dot seeds and coins.



Neil Cornell, Louisville, KY.

The Peacock-Lizard gives off a sickening smell from its mouth that no animal could resist.



Tate Rorick, Bensalem, PA.

The Quadstiller can knock over buildings with its tail.



Marie Dolske, Champaign, IL.

The puff on Too-mu's neck catches its tears. It spies on people to learn everything it can.



Dimimi Blondel, Charlottesville, VA.

Through the Greenbill's feathers you can see the colored liquids that keep its tail bright.



Antwan Colon, Gary, IN.

The giant Eat Eat can be killed if someone puts pepper on its left leg.



Susy Peterson, Walnut, IL.

The Multi-Weather Feather's feathers change color with the weather and the seasons.

Contest Winners

Remember when we asked you for crazy ways to save energy? Here are our favorites.

Train your dog to jump on your bed to wake you up. Then you can unplug your clock radio.

Wendy Chrusz, Bellerose, NY

Hatch grasshoppers and put them in a box. With the noise they make, you won't need a radio. If you want rock music, put them on a rocking chair.

Laura Coussens, Denver, IA

There's a long rope connected from the TV to your kneecap. Then you get on a bike and pedal. The energy from your kneecap turns the TV. Good exercise, too!

John Costenbader, Geneva, NY

Warm up a biscuit on a hot day in the sun.

Kyna Abel, Bozeman, MT

Put a time buzzer on the refrigerator. If anyone holds the door open more than a minute, the buzzer goes off.

Amy Washburn, Port Huron, MI

My energy saver counts the number of people that go into the room. When that exact number of people have left the room, the light automatically turns off.

Kurt Dedell, Holland, MI

Get a big blanket made and cover your house so it's nice and cozy.

Nora Newbrough, Kill Devil Hills, NC

Sing your own songs instead of listening to the radio.

Mandy Paumen, Buffalo, MN

Cut the grass with large shears or scissors. If you don't have either one, get a goat!

Karen Lawrence, Carnegie, PA



Want more information on some of the stuff in this CONTACT? Or just some things to do and see for fun? Keep reading!

Winter Garden

Even though it's winter, you can still garden—indoors. Help your plants by using kitchen scraps to make soil rich in the things plants need to grow. Here's how: Get food scraps like potato peels and carrot tops. Chop them as small as possible. Mix them in a large coffee can with soil from outside— $\frac{3}{4}$ soil and $\frac{1}{4}$ scraps. Add just enough water to make the mix moist, not soggy. Store the mix with lid on for at least four weeks. Open once a day to stir. Add a few drops of water if needed. When time is up, you will have a nutrient-rich soil, good for helping indoor plants to grow.

Disease Fighters

In *Busy Bodies* you found out how your body protects itself against disease. If you would like to learn more and also meet some real disease detectives, here are some books to look for at a library or bookstore.

Disease Detectives In 1976, many people got sick after attending a con-

Why You Get Sick and How You Get Well Measles, mumps, chicken pox—how do you get them? Ilse Goldsmith shows how tiny invisible germs can make you sick. You'll also find out how the body fights sickness, and about some of the ways doctors make you well again. The book is published by Sterling Publishing Co., Inc.



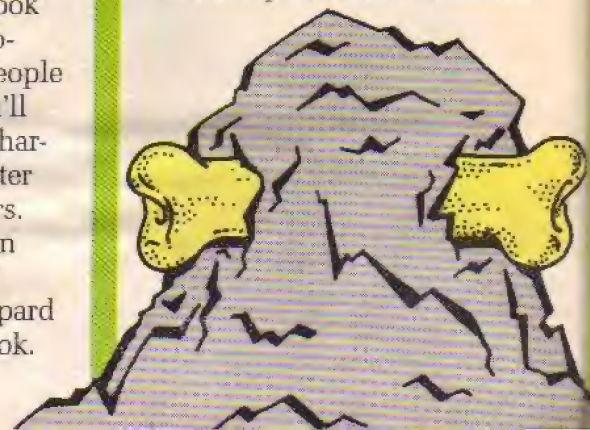
vention. Some even died. No one knew what was causing the sickness—until the National Center for Disease Control took over. This book by Louis Wolfe tells how the doctors, nurses, technicians and scientists of the Center solved this medical mystery. The book is published by Franklin Watts.

Jobs in Health Care This book by Stanley Englehardt introduces you to some of the people who work in this field. You'll meet laboratory workers, pharmacists, dieticians, computer operators, nurses and others. There is also information on how to get started in health care. Lothrop, Lee and Shepard Company publishes the book.

Fossil Museum

This review was sent in by Jennifer Ruediger, Pottstown, PA.

My family visited Dinosaur National Monument in Utah and Colorado. Technicians chisel rock to expose bones in the north wall of the quarry. The fossils are kept in the rock wall for display. You can also look into a laboratory to see how fossils are



Previews

cleaned and preserved.

The first baby stegosaurus fossils were discovered here. The bones were buried in a sandbar which kept them preserved. It was interesting to learn about prehistoric creatures.

If you've been to a science museum, why not write a review for CONTACT? If we use it, you get a T-shirt. Send your review, name, address and T-shirt size to:

3-2-1 CONTACT
Museum Review
P.O. Box 599
Ridgefield, NJ 07657



Recycling

On page 36 there is information on recycling. One of the things you can recycle is aluminum—and there's a free pamphlet that tells all about it.

The pamphlet is called "The Who, What, Where, When, Why and How of Making Cash from Aluminum Cans and Other Clean Aluminum." To get a copy, write to:

Public Relations Manager
Reynolds Aluminum
Recycling Company
6603 West Broad St.
Richmond, VA 23261



Snowflakes

Have you ever seen a snowflake up close? Snowflakes come in many beautiful, delicate shapes. To see them, you need a small piece of glass like a microscope slide, clear lacquer, a piece of cardboard, a magnifying glass—and snow. Here's what to do:

Next time it snows, put your can of lacquer and glass slide outside for a few minutes to get cold. Then spray the slide with lacquer. Place it on the cardboard and hold it outside until a few flakes fall on it. Leave the slide outside in a place not exposed to snow for an hour. That allows the lacquer to dry. Now take the slide inside and look at your flakes with a magnifying glass.

3-2-1 Contest

Wouldn't it be great to put an experiment on the space shuttle, like the kids in this month's *Contact Report*? It's not likely you'll get that chance, but we're offering the next best thing.

Think up an experiment that you'd like to send up. Draw a picture of it and tell what you hope to find out. It can be serious, funny or just far-out. Our favorites will get T-shirts. Send your drawings and descriptions to:

3-2-1 Contest
Shuttle Project
P.O. Box 599
Ridgefield, NJ 07657

Rehash Your Trash

The *Contact Report* showed you how one city solved part of its garbage problem. But not everyone can build a Mt. Trashmore. You can help the trash situation in your area by recycling some of what you usually throw away. The easiest things to recycle are bottles, cans and paper. You can even earn a bit of money doing it.

What You Can Recycle

Bottles and Jars: Glass can be melted down to make new glass. Make sure any bottles you want to recycle are empty and clean. Remove metal rings, labels and caps. Then sort them by color—clear, green, brown and so on.

Metal: Cans may be melted down and reused, too. But not all cans are made of the same metal. You may have to sort them first.

The most common can metals are aluminum and steel. Use a magnet to sort your cans. The magnet will stick to steel cans but not to aluminum ones. For cans which are a mixture of both, the magnet will stick to the steel sides but not to the aluminum tops and bottoms.

Paper: Newspaper is your best bet, but check with your recycling center to see what other kinds they might take. Just stack the paper in piles one foot (.3 m) high and tie it into bundles with string.

How to Get Started

Before you start collecting, you need to find a place to take your stuff. If you don't already know of a recycling center, here are some places you might try for information:

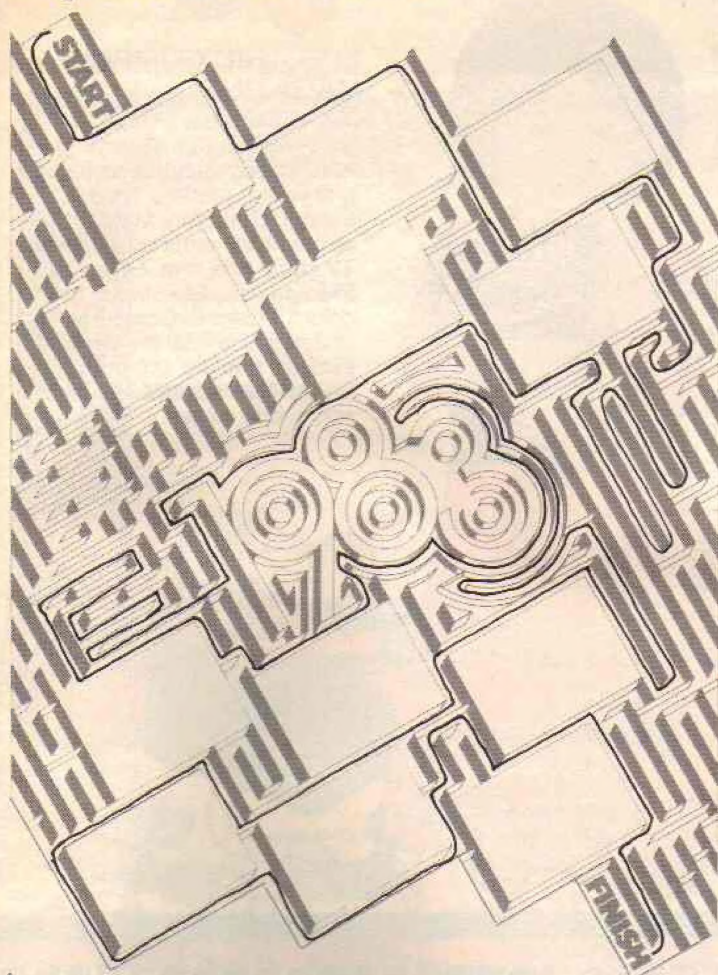
1. The yellow pages of your phonebook under recycling.
2. The local library or city hall.
3. A nearby college or university.
4. Factories that use glass, paper or metal.
5. Local junkyards.
6. Your state department of environmental protection or the federal Environmental Protection Agency (EPA).

Each recycling center has its own rules about what you can bring, how you should prepare it and how much they will pay you for your stuff. Be sure to get all the facts before you start.



Did It!

Days in a Maze (pages 20-21)



We Want Mail! That's right. We want you to write to **CONTACT**. Do you have a question about our magazine or show? Or maybe you have a science story, an idea or a picture you'd like to send us. Perhaps we'll print your letter.

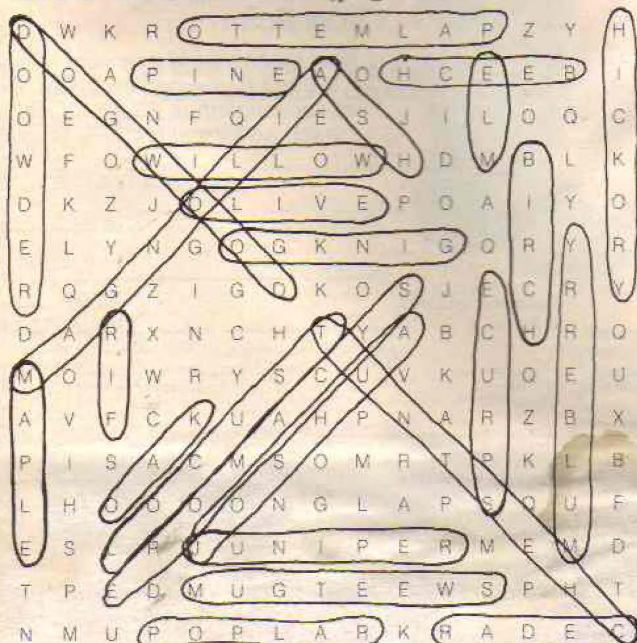
Write to:

3-2-1 **CONTACT** Letters
P.O. Box 599
Ridgefield, NJ 07657

Credits

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Tree Word Hunt (page 27)



Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 **CONTACT**:

A Chilling Story

Find out what it's like living and working at the Arctic.

Bloodhound Gang

The exciting solution to "A Case of Trouble in Paradise."

Big White Cats

Read about the world's largest collection of rare white tigers.

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8FB31

MAIL TO: THE ELECTRIC COMPANY
200 Watt Street, P.O. Box 2922, Boulder, Co. 80322

Earthfacts: Blizzards by Nancy Arnott

Each month CONTACT will bring you another Earth Works. Save these pages in a notebook. Soon you will have a complete guide to the

EarthWorks

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gerous because the blinding snow and animals to get lost. Then from cold and snow. During one e 1800s, many farmers in the lives trying to reach their barns animals. The farmers were ng snow and lost their way just eir doors. They were later found

at are not major disasters can er a blizzard in the Netherlands had to stop deliveries. The the glass milk bottles faster than d carry them through the snow-

s can start when a mass of 1, pushing up on warmer air in lace where the air masses front. Rising air causes clouds nt, and it begins to snow. As orward, cold, strong winds er. They whip up the newly- cause temperatures to drop ates blizzard conditions.

For Ages 6-10.



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DETACH HERE AND MAIL TODAY





EarthWorks

Blizzards

Sights like this are not unusual after a blizzard. Not only cars, but trucks, buses, fences, street signs—all can be buried by a blanket of snow several feet thick. In some places, blizzards have been so severe that they have sealed off the bottom floors of some houses with a wall of snow. People had to leave their homes by second-floor fire escapes.

Even though blizzards can do strange and often very funny things, they are among the most dangerous kinds of storms. To find out more, turn to page 39.

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